

# HEALTH

The Stanford Center on Poverty and Inequality

BY JASON BECKFIELD AND KATHERINE MORRIS

## KEY FINDINGS

- The U.S. population is not just sicker, on average, than the European population, but also has a higher level of health inequality than the European population (when data from the U.S. Current Population Survey and the European Union Survey of Income and Living Conditions are compared).
- The U.S. states that combine low self-rated health with high health inequality (Mississippi, Kentucky, Louisiana, North Carolina, Ohio, Tennessee, and South Carolina) look strikingly similar—in terms of their health profiles—to Central and Eastern European countries (Bulgaria, the Czech Republic, Estonia, Latvia, and Slovenia).
- At the other extreme are U.S. states that combine high self-rated health with low health inequality (Nevada, Idaho, Utah, Washington, and Wyoming). These states, although “high-performing” in the U.S. context, are nonetheless less healthy and less equal than the corresponding “high-performing” countries in the European context (Austria, Denmark, France, and Spain).

People living in the United States today can expect to live shorter and sicker lives, compared to people living in any other rich democracy.<sup>1</sup> This “health gap” between the U.S. and its peer countries is growing over time, as Canadian, British, Australian, French, German, and Swedish death rates among people aged 45–54 continue falling, and the U.S. fails to keep pace with such changes.<sup>2</sup>

But such comparisons—telling as they are—rely on the combination of mortality rates across entire populations, without regard for inequality within these societies. It is impossible to tell from these averages how much inequality there is between rich Americans and poor Americans, and between the rich British and poor British. Cross-national comparisons of life expectancy also depend on the assumption that people born into each society this year will experience the same mortality rates as people who were born over the past hundred years.

These two limitations of cross-national comparisons of aggregated-average population health matter because inequalities and averages can fit together in different ways. It could be the case, for example, that the American average is pulled down by a large number of unhealthy people who are sicker than unhealthy people in the United Kingdom, even as healthier people in the U.S. are as healthy as healthy people in the United Kingdom. It could also be the case that the current health of the U.S. population is underestimated in the calculation of life expectancy, if Americans living in the

next hundred years will be healthier than Americans who have lived and died over the past hundred years.

In this report, we evaluate the state of the union by comparing health inequality among Americans to health inequality among people living in 27 European countries. Our evaluation extends the cross-national comparisons of aggregated-average life expectancies and mortality rates by comparing the health of richer people to the health of poorer people within each country. That is, our focus is on the distribution of population health, or health inequality. We then look across countries to evaluate whether and how the gap between the health of the rich and the health of the poor varies. We aim to answer the following two simple questions: If a person with a lower income could choose to live in the U.S. or in a different rich democracy, where should she choose to live? And, likewise, if a person with a higher income could choose to live in the U.S. or in a different rich democracy, where should she choose to live?

### Health Inequality in the U.S.

The 2015 “State of the States” issue of *Pathways* included an excellent article by Sarah Burgard and Molly King, who used 2013 data from the U.S. Center for Disease Control and Prevention’s Behavioral Risk Factor Surveillance System (BRFSS) to estimate health inequality in each of the 50 U.S. states (plus the District of Columbia).<sup>3</sup> We replicate their analysis using the 2008–2010 Integrated Public Use Microdata Series–Current Population Survey (IPUMS-CPS), to

set a baseline for our cross-national comparisons.<sup>4</sup>

We measure health with a questionnaire item that asked respondents to rate their own health: “Would you say that in general your health is excellent, very good, good, fair, or poor?” Consistent with earlier work using the same item, we combine “fair” and “poor” responses into one category (which we will dub as “poor health”), and we combine the remaining responses into another category (which we will dub as “good health”). We label those living in a household with an income at or below the 20th percentile for their state as “low income,” and we label those living in a household with an income at or above the 80th percentile for their state as “high income.” We then calculate a simple estimate of relative health inequality using relative risk ratios: the prevalence of poor health among low-income persons divided by the prevalence of poor health among high-income persons.

To paint a complete picture of health inequality, we must consider not just the inequality in the distribution of poor health across people that are grouped by income, but also the prevalence of poor health. To see why, imagine two societies: one that is on-average sicker, and another that is on-average healthier. Suppose that, in each society, low-income households are twice as likely as high-income households to report health that is poor. In the healthier society, the difference between the health of the high-income households and the health of the low-income households will be smaller in absolute terms, even though their relative inequality is exactly the same.

Following Burgard and King, we combine this information about relative health inequalities and the prevalence of sickness into a figure that shows four groups of states: unequal unhealthy states (UU), unequal healthy states (UH), equal healthy states (EH), and equal unhealthy states (EU).

Figure 1 shows clear regional differences in the states. There are 15 states in the UU group, and the most unhealthy, unequal states are the Southern states of Alabama, Kentucky, Louisiana, Mississippi, and Tennessee. These states have an above-median prevalence of poor health (thus the designation “unhealthy”), and an above-median level of relative health inequality between people in households with an annual income in the bottom quintile for their state and those in households with an annual income in the top quintile for their state. These are the states where it is the worst to be poor.

Consider, for example, Mississippi: Here, the prevalence of poor health is 0.23 (and the prevalence of good health is 0.77). The relative risk ratio comparing low-income to high-income

people is 5.57, meaning that low-income Mississippians are over five times more likely to report poor health than are high-income Mississippians.

In the opposite quadrant of the figure, we find those states that are both relatively equal and healthier. Idaho stands out for having both a low prevalence of poor health, at 11 percent of Idahoans, as well as a low level of inequality. Indeed, Idaho has the lowest relative risk ratio in the U.S., at 3.03. Hawaii also has a relative risk ratio of 3.03, but has a comparatively higher prevalence of poor health, indeed it is above the national median for these data.

The next lowest level of relative inequality in the group of healthy states is found in Nevada (with a relative risk ratio of 3.41), followed by Nebraska, Utah, and South Dakota. Indeed, what is striking about the figure is that there are few U.S. states (only 12, including Idaho) in the equal-healthy group. And three of those states (Alaska, Minnesota, and Washington) are barely on the more-equal side of the red line. The upshot, as we’ll see, is that most of the healthy states are also unequal, and most of the equal states are also unhealthy.

A stark exception to this pattern is Massachusetts, which has a low prevalence of poor health (0.11) and by far the highest amount of inequality (with a relative risk ratio of 15.61). This staggering health inequity persists today and has been recognized by the Massachusetts Department of Public Health as a pressing policy concern.<sup>5</sup> Its European analogue is the small, Mediterranean country of Cyprus. While tiny Cyprus (population 1.1 million) is only about one-sixth the size of Massachusetts (population 6.7 million), larger Netherlands (population 16.8 million) also combines a very high level of health inequality with a healthy population average (Figure 2).

If we average these inequality calculations across states, and weight by the population in each state (so that big states like California, New York, and Texas contribute more information), we find that the relative risk ratio for the U.S. as a whole is about 5. We also find that, overall, the U.S. prevalence of reporting poor health is 13.6 percent. These two statistics establish the U.S. as an outlier with respect to both health inequality *and* overall healthiness. As we will discuss in greater detail below, the U.S. level of inequality is far higher than we observe in most European countries, and the prevalence of poor health is on par with the former Soviet-bloc states of Central and Eastern Europe. As we can see in Figure 2, in Europe, the overall relative risk ratio (weighted by the populations of the 27 societies for which we have data) is also about 5, and the overall prevalence of poor health is 9 percent.

However, the difference in health inequality between the U.S. and Europe becomes abundantly clear when we account for population differences in age, gender, marital status, education, and unemployment. To do so, we calculate the incident risk ratio for each state or country separately using modified Poisson regression models with robust error variances.<sup>6,7</sup> As we show below in Figures 5a and 5b, the incident rate ratio of poor health for low-income Americans across all 50 states and the District of Columbia is 2.3, while the incident rate ratio of poor health for low-income Europeans across all 27 countries included in the analysis is 1.6. It follows that Europeans are, on average, not just healthier than Americans, but are also more equal when accounting for population differences in key demographic and social characteristics.

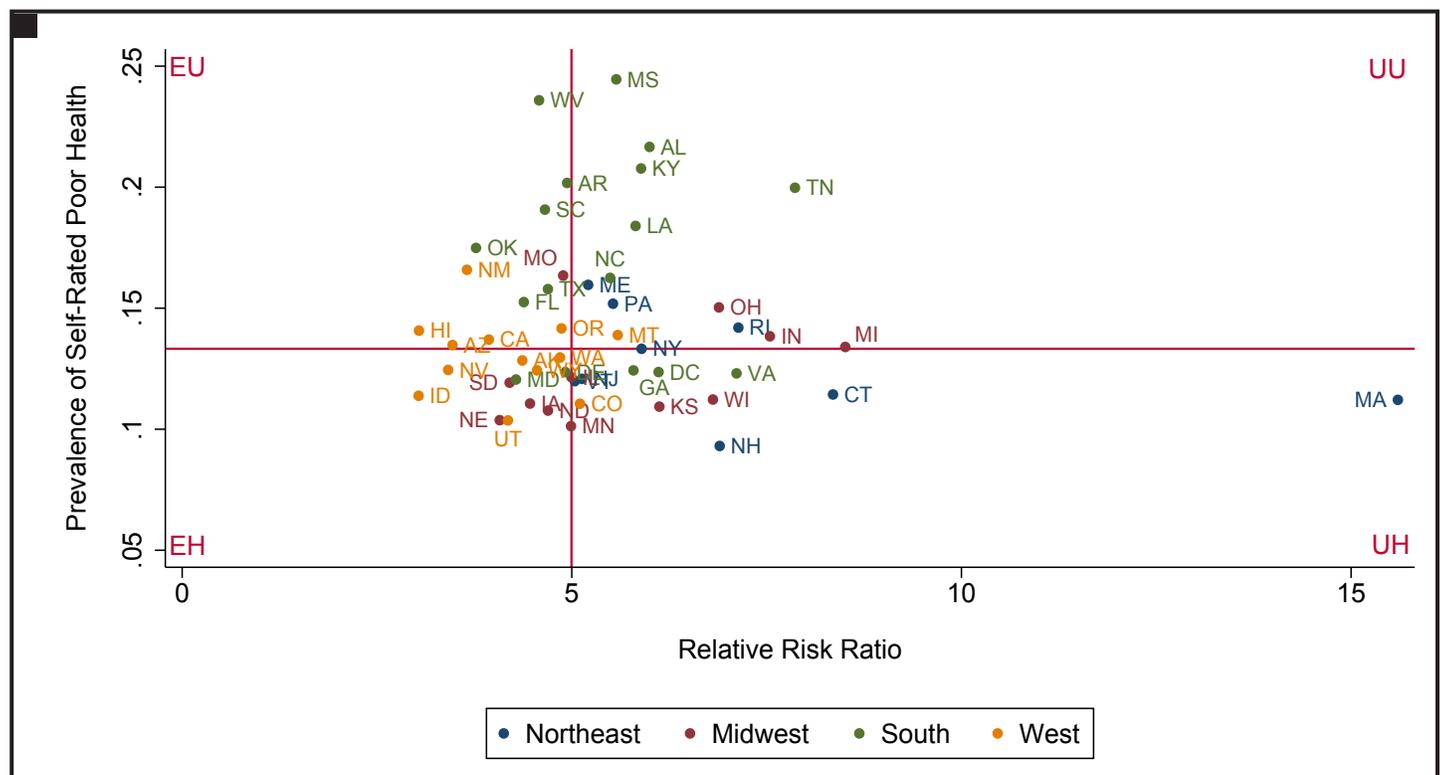
### Health Inequality in Europe

We now turn to a more thorough comparison of U.S. and European health and health inequality. To place health inequalities in the U.S. in comparative context, we use data from the European Union Survey of Income and Living

Conditions (EU-SILC), which is currently the best source of population-representative, cross-nationally comparable, and individual-level information about health in European societies.

We must note that our analysis of the EU-SILC data differs from our analysis of the IPUMS-CPS data in an important respect. The wording of responses to the self-rated health item differs: in the EU-SILC data, the responses are “very bad,” “bad,” “good,” “very good,” and “excellent.” We collapse the bottom two and top three categories, again drawing the line at good-or-better health versus less-than-good health. The EU-SILC categorization differs, then, from the IPUMS-CPS categorization by virtue of replacing the label “fair” with that of “bad” and the label “poor” with that of “very bad.” If these inconsistencies in labeling have any effect, a reasonable hypothesis is that they would create the appearance of better health in Europe (given that those with objectively middling health might be more inclined to label it as “fair” in the IPUMS-CPS than “bad” in the EU-SILC).

FIGURE 1. Relative Health Inequality by Prevalence of Self-Rated Poor Health in U.S. States and the District of Columbia, 2008–2010



Note: Relative risk ratios are calculated as the prevalence of poor health among low-income persons (those with a household income in the bottom quintile for that state) divided by the prevalence of poor health among high-income persons (those with a household income in the top quintile for that state). All estimates are unweighted. Data are from the 2008–2010 IPUMS-CPS. N = 441,843. Poor health is defined as self-rated “fair” or “poor” health. Red lines represent the median values across all states. EU: Equal-Unhealthy; UU: Unequal-Unhealthy; EH: Equal-Healthy; UH: Unequal-Healthy. Regional divisions reflect Census Bureau categories. States are marked by their two-letter postal abbreviations: Alabama (AL); Alaska (AK); Arizona (AZ); Arkansas (AR); California (CA); Colorado (CO); Connecticut (CT); Delaware (DE); District of Columbia (DC); Florida (FL); Georgia (GA); Hawaii (HI); Idaho (ID); Illinois (IL); Indiana (IN); Iowa (IA); Kansas (KS); Kentucky (KY); Louisiana (LA); Maine (ME); Maryland (MD); Massachusetts (MA); Michigan (MI); Minnesota (MN); Mississippi (MS); Missouri (MO); Montana (MT); Nebraska (NE); Nevada (NV); New Hampshire (NH); New Jersey (NJ); New Mexico (NM); New York (NY); North Carolina (NC); North Dakota (ND); Ohio (OH); Oklahoma (OK); Oregon (OR); Pennsylvania (PA); Rhode Island (RI); South Carolina (SC); South Dakota (SD); Tennessee (TN); Texas (TX); Utah (UT); Vermont (VT); Virginia (VA); Washington (WA); West Virginia (WV); Wisconsin (WI); Wyoming (WY).

To facilitate U.S.-Europe comparisons, we show our EU-SILC results in graphs that are formatted in the same way as the graphs of IPUMS-CPS results. The first striking U.S.-Europe difference is the lower prevalence of “poor health” in all European societies. While in the U.S. this prevalence varies from a low of 0.09 in New Hampshire to a high of 0.23 in Mississippi, in Europe it ranges from a low of 0.04 in the Netherlands to a high of 0.21 in Lithuania. The simple, if unsurprising, conclusion: Good health is more prevalent in Europe than in the U.S. And this greater prevalence of good health in Europe would probably be even more pronounced if the large incarcerated population in the U.S. had been included in the calculations.<sup>8</sup>

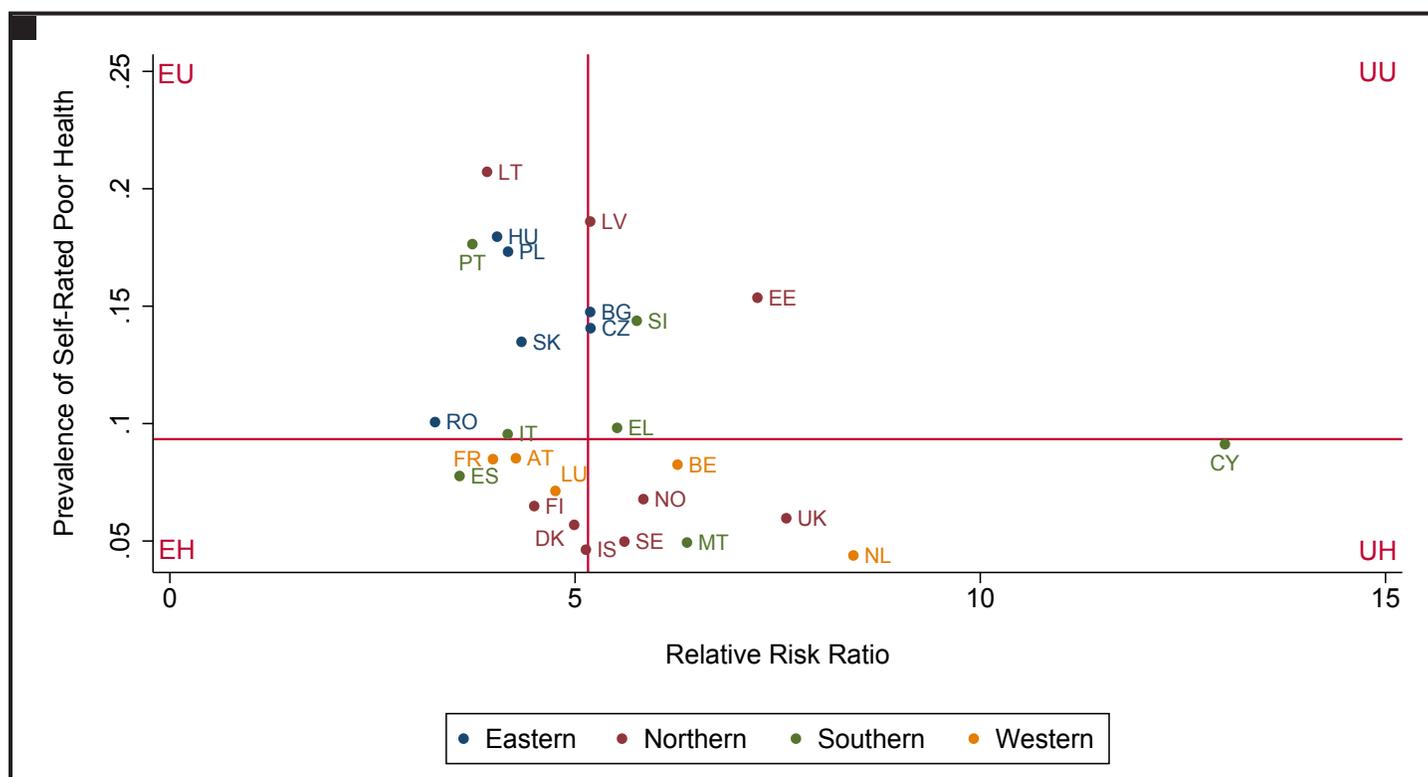
Setting aside this overarching difference, there are also some similarities. In Europe, as in the U.S., equal-healthy places (the lower-left quadrant of Figure 2) are scarce. France and Spain are the only large countries in this quadrant. This equal-healthy group also includes Austria, Denmark, Iceland, Luxembourg, and Norway.

It is also instructive to compare the places falling into the unequal-unhealthy quadrant. The countries of Bulgaria, the Czech Republic, Estonia, Latvia, and Slovenia represent the clearest European cases of unequal-unhealthy societies in terms of simple relative inequality, while the U.S. analogues are Alabama, Kentucky, Louisiana, Mississippi, and Tennessee.

It would probably come as a surprise to Americans living in these states that they share a population health profile with people living in former Soviet-bloc societies. This result raises the question of what sort of ruptures in the social fabric these states might share with societies that so recently experienced the transition from socialism to capitalism.

Because the EU-SILC and the IPUMS-CPS use different response categories for the self-rated health question, we re-estimated the relative risk ratios for the other health items that are available in the EU-SILC. The first alternative measure is a binary indicator for having a chronic condition, defined as a “long-standing illness, disability, or infirmity.” The second

FIGURE 2. Relative Health Inequality by Prevalence of Self-Rated Poor Health in 27 European Countries, 2008–2010



Note: Relative risk ratios are calculated as the prevalence of poor health among low-income persons (those with a household income in the bottom quintile for that country) divided by the prevalence of poor health among high-income persons (those with a household income in the top quintile for that country). All estimates are unweighted. Data are from the 2010 EU-SILC. N = 533,933. Poor health is defined as self-rated “bad” or “very bad” health. Red lines represent the median values across all countries. EU: Equal-Unhealthy; UU: Unequal-Unhealthy; EH: Equal-Healthy; UH: Unequal-Healthy. Regional divisions reflect United Nations categories. Eastern European countries are Bulgaria (BG), Czech Republic (CZ), Hungary (HU), Poland (PL), Romania (RO), and Slovakia (SK). Northern European countries are Denmark (DK), Estonia (EE), Finland (FI), Iceland (IS), Latvia (LV), Lithuania (LT), Norway (NO), Sweden (SE), and the United Kingdom (UK). Southern European countries are Cyprus (CY), Greece (EL), Italy (IT), Malta (MT), Portugal (PT), Slovenia (SL), Spain (ES), Austria (AT), Belgium (BE), France (FR), Luxembourg (LU), and the Netherlands (NL).

alternative measure is a binary indicator for having a physical limitation, defined as reporting any difficulty performing “activities people usually do” due to “an ongoing health problem.”

The results from these additional analyses are shown in Figures 3 and 4. Overall, there is much less health inequality according to these measures. In both cases, Europeans in households with annual incomes in the bottom quintile are between two and three times as likely to report problems as Europeans in households with annual income in the top quintile.

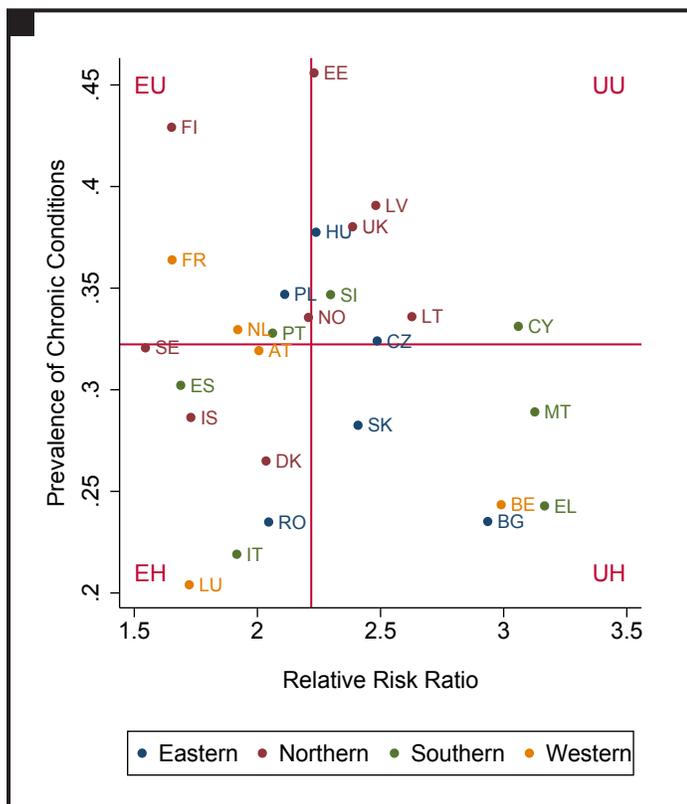
The relative equality of European health may of course be a function of universal healthcare in Europe. When healthcare is universally provided, treatment for various conditions and

limitations should not be as income-dependent as it is in the U.S. It is also striking that, despite the relatively high prevalence of chronic conditions and activity limitations (30% and 25%, respectively), the prevalence of self-rated “poor health” is so much lower than it is in the U.S. (9% vs. 13.6%).

**Choosing Where to Live**

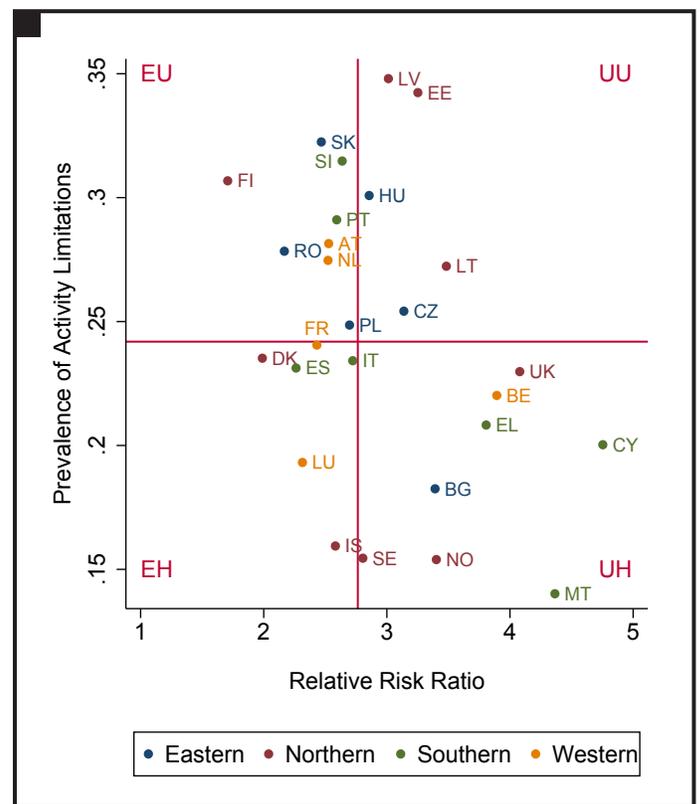
At the outset of this article, we promised to weigh in on where one might choose to move under the conceit that individuals relocate on the basis of health considerations alone. If our hypothetical unhealthy poor person were suddenly geographically mobile, where should she move? Our results suggest that, if she were confined to the U.S., she would do best in the western states of Idaho, Nevada, or Utah. But she would do yet better in the countries of Austria or Spain.

FIGURE 3. Relative Health Inequality by Prevalence of Chronic Conditions in 27 European Countries, 2008–2010



Note: Relative risk ratios are calculated as the prevalence of chronic conditions among low income persons (those with a household income in the bottom quintile for that country) divided by the prevalence of chronic conditions among high income persons (those with a household income in the top quintile for that country). All estimates are unweighted. Data are from the 2010 EU-SILC. N = 533,933. Chronic conditions are defined as “any long-standing illness, disability or infirmity.” Red lines represent the median values across all countries. EU: Equal-Unhealthy; UU: Unequal-Unhealthy; EH: Equal-Healthy; UU: Unequal-Unhealthy. Regional divisions reflect United Nations categories. Eastern European countries are Bulgaria (BG), Czech Republic (CZ), Hungary (HU), Poland (PL), Romania (RO), and Slovakia (SK). Northern European countries are Denmark (DK), Estonia (EE), Finland (FI), Iceland (IS), Latvia (LV), Lithuania (LT), Norway (NO), Sweden (SE), and the United Kingdom (UK). Southern European countries are Cyprus (CY), Greece (EL), Italy (IT), Malta (MT), Portugal (PT), Slovenia (SL), Spain (ES), Austria (AT), Belgium (BE), France (FR), Luxembourg (LU), and the Netherlands (NL).

FIGURE 4. Relative Health Inequality by Prevalence of Activity Limitations in 27 European Countries, 2008–2010



Note: Relative risk ratios are calculated as the prevalence of activity limitations among low income persons (those with a household income in the bottom quintile for that country) divided by the prevalence of activity limitations among high income persons (those with a household income in the top quintile for that country). All estimates are unweighted. Data are from the 2010 EU-SILC. N = 533,933. Activity limitations are defined as “any limit to daily activities” due to illness or disability. Red lines represent the median values across all countries. EU: Equal-Unhealthy; UU: Unequal-Unhealthy; EH: Equal-Healthy; UU: Unequal-Unhealthy. Regional divisions reflect United Nations categories. Eastern European countries are Bulgaria (BG), Czech Republic (CZ), Hungary (HU), Poland (PL), Romania (RO), and Slovakia (SK). Northern European countries are Denmark (DK), Estonia (EE), Finland (FI), Iceland (IS), Latvia (LV), Lithuania (LT), Norway (NO), Sweden (SE), and the United Kingdom (UK). Southern European countries are Cyprus (CY), Greece (EL), Italy (IT), Malta (MT), Portugal (PT), Slovenia (SL), Spain (ES), Austria (AT), Belgium (BE), France (FR), Luxembourg (LU), and the Netherlands (NL).

But what about a high-income person? Where should that person choose to live? Our results suggest that here too there are a range of consequential choices, with the best ones being the Netherlands, Iceland, Malta, or Sweden, certainly a disparate lot. In these places, the prevalence of “poor health” among people with household income in the top 20 percent for their country of residence is vanishingly low, below 5 percent. Crucially, our models predict that our hypothetical mover would not fare as well in *any* of the U.S. states that are best for the better-off: Connecticut, New Hampshire, Virginia, or Wisconsin.

### Conclusions

Our analyses of health prevalence and relative health inequality demonstrate that many of the very places with the least health inequality are also those with the best overall popula-

tion health. It follows that our hypothetical low-income person and high-income person are healthiest in exactly the same places: Austria, France, and Spain. These populations are both very healthy by international standards and have a very low level of health inequality by international standards (especially in terms of absolute inequality).

People living in the U.S. are often reluctant to draw lessons from the European experience, in part because the U.S. is so much larger and heterogeneous than many European countries. We tackle this problem by disaggregating the U.S. into its 50 states, plus the District of Columbia. Furthermore, our regression results in Figure 5 demonstrate the persistence of these differences when controlling for population differences in key demographic and social characteristics.

FIGURE 5A. Rank Ordered Self-Rated Health Inequality in U.S. States and the District of Columbia, Controlling for Socio-Demographic Characteristics, 2008–2010

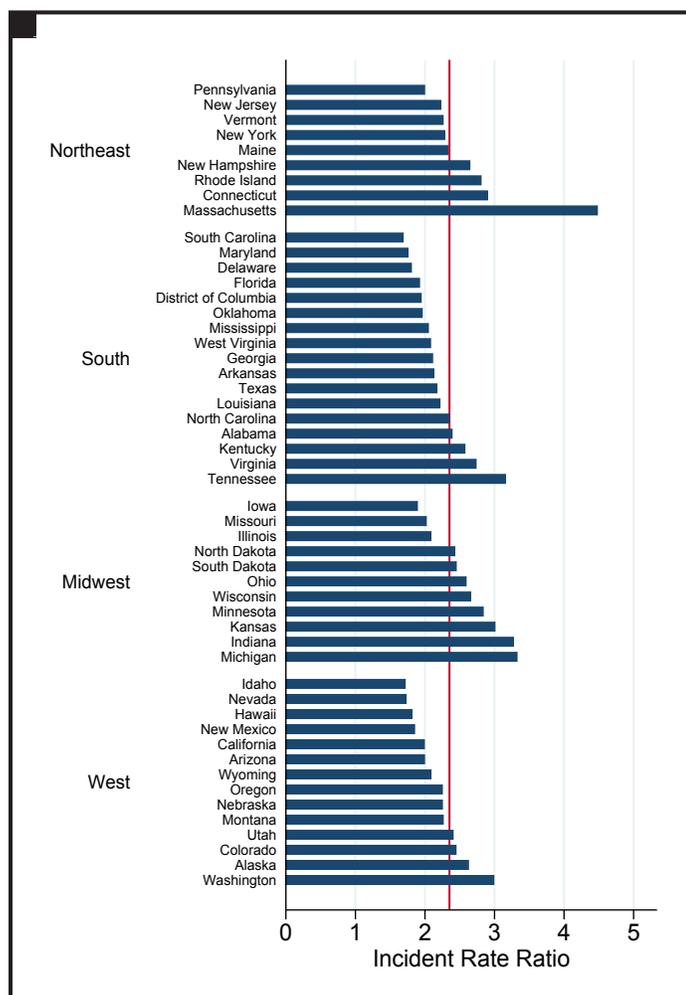
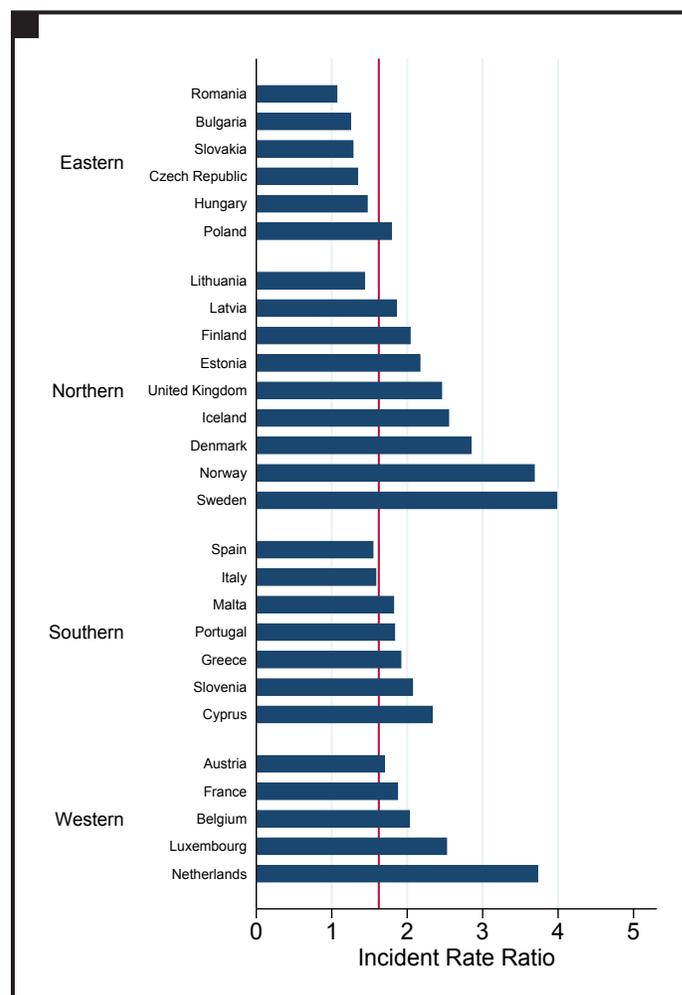


FIGURE 5B. Rank Ordered Self-Rated Health Inequality in 27 European Countries, Controlling for Socio-Demographic Characteristics, 2008–2010



Note: The bar charts above display the relative risk of reporting poor health for low-income persons (household income in the bottom quintile) compared to high-income persons (household income in the top quintile), controlling for age, gender, marital status, education, and unemployment. The incident rate ratios (IRRs) were estimated using separate modified Poisson regression models with robust error variances for each state (5a) or country (5b). Red lines reflect the IRR from a full model with all states (5a) or countries (5b).

Our results suggest that, much like income growth and income equality, population health and health equality can go together. As is so often the case in the analysis of income inequality and poverty, social policy choices may be the key to combining better health and health equality. Perhaps we should not be surprised that market-fundamentalist states in the U.S. have levels of average health and health inequality that are remarkably similar to the post-Soviet “shock therapy”

countries of Central and Eastern Europe. Indeed, compared to a peer group of 27 European nations, even the U.S. states that are unusually healthy and have unusually low health inequalities have a long way to go. ■

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## NOTES

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2. Case, Anne and Angus Deaton. 2015. “Rising morbidity and mortality in midlife among white non-Hispanic Americans in the 21st century.” *Proceedings of the National Academy of Sciences*.

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4. We use data from the 2008–2010 IPUMS-CPS rather than the 2013 BRFSS in order to calculate the 80/20 percentile ratio and to subsequently harmonize our U.S. analyses with the 2010 EU-Statistics on Income and Living Conditions (EU-SILC) Longitudinal File, Version 4.

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6. Mackenbach, Johan P. et al. 2008. “Socio-economic Inequalities in Health in 22 European Countries.” *New England Journal of Medicine*, 358(23), 2468–2481.

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